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1. Your reference — 11032P3 GB/AK

31 AUG 2002

2. Patent application number *(The Patent Office will fill in this part)* — 0220295.0

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

Reckitt Benckiser Inc
1655 Valley Road
Wayne
New Jersey 07474
UNITED STATES OF AMERICA

Patents ADP number *(if you know it)* — 07852247001

If the applicant is a corporate body, give the country/state of its incorporation — Delaware

4 Title of the invention — Improvements In or Relating to Organic Compositions

5. Name of your agent *(if you have one)*

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

John Crawford McKnight
Reckitt Benckiser plc
Group Patents Department
Dansom Lane
HULL
HU8 7DS
UNITED KINGDOM

Patents ADP number *(if you know it)* — 07799521001

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Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application *(day / month / year)*	Date of filing *(day / month / year)*

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if:*

a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body.
See note (d))

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Priority documents	
Translations of priority documents	
Statement of inventorship and right to grant of a patent *(Patents Form 7/77)*	
Request for preliminary examination and search *(Patents Form 9/77)*	One /
Request for substantive examination *(Patents Form 10/77)*	One /
Any other documents *(please specify)*	FS2 /

1. I/We request the grant of a patent on the basis of this application.

Signature: JMcKnight — Date: 29 August 2002

John C McKnight

2. Name and daytime telephone number of Person to contact in the United Kingdom: John C McKnight (01482) 583719

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IMPROVEMENTS IN OR RELATING TO ORGANIC COMPOSITIONS

The present invention relates to liquid detergent compositions, especially compositions which dissolve and disperse satisfactorily in water.

Background of the Invention

Liquid detergent compositions comprising surfactants are known. Such compositions can be used, for example, as hard surface cleaners, in either dilutable form or in ready to use form. In general, many surfactant compositions comprise a large amount of water. For example, hand dishwashing compositions often contain up to 80 wt% water. Such compositions do not generally have any compatibility problems when being diluted with a large quantity of water.

For some purposes it is desirable to have detergent compositions which are anhydrous or substantially anhydrous. In some instances, when such compositions are anhydrous or substantially anhydrous, pre-measured doses can be prepared so that the user of the these compositions do not have to measure the appropriate amount of surfactant composition to use every time they wish to clean hard surfaces.

The present composition is especially suitable for use in a water-soluble container where the container is simply added to a large quantity of water and dissolves, releasing its contents. The favorable dissolution and dispersion properties of the composition of the present invention are particularly useful in this context.

Thus the present invention also provides a water-soluble container containing a composition as defined above.

The water-soluble container may comprise a thermoformed or injection molded water-soluble polymer. It may also simply comprise a water-soluble film. Such containers are described, for example, in EP-A-524,721, GB-A-2,244,258, WO 92/17,381 and WO 00/55,068.

The method of thermoforming the container is similar to the process described in WO 92/17382. A first poly (vinyl alcohol) ("PVOH") film is initially thermoformed to produce a non-planar sheet containing a pocket, such as a recess, which is able to retain the aqueous composition. The pocket is generally bounded by a flange, which is preferably substantially planar. The pocket may have internal barrier layers as described in, for example, WO 93/08095. The pocket is then filled with the aqueous composition, and a second PVOH film is placed on the flange and across the pocket. The second PVOH film may or may not be thermoformed. If the first film contains more than one pocket, the second film may be placed across all of the pockets for convenience. The pocket may be completely filled, or only partly filled, for example to leave an air-space of from 2 to 20%, especially from 5 to 10%, of the volume of the container immediately after it is formed. Partial filling may reduce the risk of rupture of the container if it is subjected to shock and reduce the risk of leakage if the container is subjected to high temperatures.

The films are then sealed together, for example by heat sealing across the flange. Other methods of sealing the films together may be used, for example infra-red, radio frequency, ultrasonic, laser, solvent, vibration or spin welding. An adhesive such as an aqueous solution of PVOH may also be used. The seal desirably is also water-soluble.

For injection molding the containers of the present invention, the container or capsule generally comprises a receptacle part which holds the composition and a closure part, which may simply close the receptacle part or may itself have at least some receptacle function. The receptacle part preferably has side walls which terminate at their upper end in an outward flange in which the closure part is sealingly secured, especially if the closure part is in the form of a film. The securement may be by means of an adhesive but is preferably achieved by means of a seal, between the flange and the closure part. Heat sealing may be used or other methods such as infra-red, radio frequency, ultrasonic, laser, solvent, vibration or spin welding. An adhesive such as an aqueous solution of PVOH or a cellulose ether may also be used. The seal is desirably also water-soluble.

The closure part may itself be injection molded or blow molded. Preferably, however, it is a plastic film secured over the receptacle part. The film may, for example, comprise

PVOH or a cellulose ether such as HPMC or another water-soluble polymer.

The container walls have thicknesses such that the containers are rigid. For example, the outside walls and any inside walls which have been injection molded independently generally have a thickness of greater than 100μm, for example greater than 150μm or greater than 200μm, 300μm or 500μm. Preferably, the closure part is of a thinner material than the receptacle part. Thus, typically, the closure part is of thickness in the range 10 to 200 μm, preferably 50 to 100 μm, and the wall thickness of the receptacle part is in the range 300 to 1500 μm, preferably 500 to 1000 μm. The closure part may, however, also have a wall thickness of 300 to 1500 μm, such as 500 to 1000 μm.

Preferably, the closure part dissolves in water (at least to the extent of allowing the washing composition in the receptacle part to be dissolved by the water; and preferably completely) at 20°C in less than 3 minutes, preferably in less than 1 minute.

The receptacle part and the closure part could be of the same thickness but in this event the closure part may, for example, be of higher solubility than the receptacle part, in order to dissolve more quickly.

In the manufacturing method, the array, formed by injection molding, is fed to a filling zone, and all the receptacle parts are charged with the washing composition. A sheet of a water-soluble polymer such as PVOH or a cellulose ether may then be secured over the top of the array, to form the closure parts for all the receptacle parts of the array. The array may then be split up into the individual washing capsules, prior to packaging, or it may be left as an array, for packaging, to be split by the user. Preferably, it is left as an array, for the user to break or tear off the individual washing capsules. Preferably, the array has a line of symmetry extending between capsules, and the two halves of the array are folded together, about that line of symmetry, so that closure parts are in face-to-face contact. This helps to protect the closure parts from any damage, between factory and user. It will be appreciated that the closure parts are more prone to damage than the receptacle parts. Alternatively two identical arrays of washing capsules may be placed together with their closure parts in face-to-face contact, for packaging.

In all cases, the polymer is formed into a container or receptacle such as a pouch which can receive the composition, which is filled with the composition and then sealed, for example by heat sealing along the top of the container in vertical form-fill-processes or by laying a further sheet of water-soluble polymer or molded polymer on top of the container and sealing it to the body of the container, for example by heat sealing. Other methods of sealing the films together may be used, for example infra-red, radio frequency, ultrasonic, laser, solvent, vibration or spin welding. An adhesive such as an aqueous solution of PVOH may also be used. The seal desirably is also water-soluble.

Desirably the water-soluble polymer is PVOH. The PVOH may be partially or fully alcoholized or hydrolyzed. For example, it may be from 40 to 100% preferably 70 to 92%, more preferably about 88%, alcoholized or hydrolyzed, polyvinyl acetate. When the polymer is in film form, the film may be cast, blown or extruded.

The water-soluble polymer is generally cold water (20°C) soluble, but depending on its chemical nature, for example the degree of hydrolysis of the PVOH, may be insoluble in cold water at 20°C, and only become soluble in warm water or hot water having a temperature of, for example, 30°C, 40°C, 50°C or even 60°C. It is preferable that the water soluble polymer is soluble in cold water.

The water soluble containers of the present invention find particular use where a unit-dosage form of the composition is required which is then diluted prior to use. Thus, for example, the composition may be useful as a hard surface cleaner (for example, floors, bathroom surfaces, windows) which is diluted prior to use. The water soluble container to be used for hard surface cleaners can take any shape, such as an envelope, sachet, sphere, cylinder, cube or cuboid (i.e. a rectangular parallelepiped whose faces are not all equal) where the base is square, circular, triangular, or oval, but water soluble containers of rounded cuboid or cylindrical shape are preferred; rounded cuboid for use in, for example, a bucket of water and cylindrical when used as a refill for a trigger bottle. For the rounded cuboid water soluble container, the water soluble container can have dimensions such as, for example, having a length of 1 to 5 cm, especially 3.5 to 4.5 cm, a width of 1.5 to 3.5 cm, especially 2 to 3 cm, and a height of 1 to 2 cm, especially 1.25 to 1.75 cm. The water-soluble container may hold, for example, from 10 to 40g of the composition, especially from 10 to 25g of the composition of the present composition.

For the cylindrical shape, the water soluble container diameter should be such that the water soluble container fits through the opening of a trigger bottle, generally about 2 cm. The length of the water soluble container can be about 1 to 8 cm. Such water soluble containers hold about 3 to about 25 g of composition. However, it should be understood that there is no theoretical limitation, in either size or shape, and what is suitable will normally be decided upon the basis of the "dose" of the water soluble container's contents, the size of any aperture the water soluble container may have to pass through, and the available means of delivery.

In some embodiments, a single layer film for both the top and bottom the packet can be used or a laminate film of two or more layers of PVOH or other water soluble film can be used on either the top or bottom or on both top and bottom of the packet. For the cylindrical container, the film can also be single layer or a laminate of two or more layers of PVOH or other water soluble film.

PVOH films are available from a variety of sources such as Monosol (Chris Craft) and Kuaray.

Summary of the Invention

The present invention relates to a water soluble container containing a composition comprising:

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof;

(b) at least one organic solvent having a solubility in water of at least 4%wt.;

(c) optionally, at least one alkanolamine; and

(d) optionally, up to about 10% wt. of one or more conventional additives selected from coloring agents, fragrances and fragrance solubilizers, viscosity modifying agents, other surfactants, other antimicrobial/germicidal agents, pH adjusting agents and pH buffers including organic and inorganic salts, optical brighteners, opacifying agents, hydrotropes, antifoaming agents, enzymes, anti-spotting agents, anti-oxidants, preservatives, and anti-corrosion agents;

wherein said composition contains no more than 1%wt. water.

The invention further relates to a water soluble container containing a composition comprising:

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof being present in an amount of from about 0.01 to about 20 percent by weight;

(b) at least one organic solvent having a solubility in water of at least 4%wt., said organic solvent being present in an amount of from about 5 to about 95 percent by weight;

(c) optionally, at least one alkanolamine, said alkanolamine, when present, is present in an amount of from about 0.01 to about 10 percent by weight; and

(d) optionally, up to about 10% wt. of one or more conventional additives selected from coloring agents, fragrances and fragrance solubilizers, viscosity modifying agents, other surfactants, other antimicrobial/germicidal agents, pH adjusting agents and pH buffers including organic and inorganic salts, optical brighteners, opacifying agents, hydrotropes, antifoaming agents, enzymes, anti-spotting agents, anti-oxidants, preservatives, and anti-corrosion agents;

wherein said composition contains no more than 1%wt. water.

The compositions can vary from those comprising

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof; and

(b) at least one organic solvent having a solubility in water of at least 4%wt.

and to those comprising

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof; and

(b) at least one organic solvent having a solubility in water of at least 4%wt.; and

(c) at least one alkanolamine.

The water soluble container can comprise a thermoformed or injection molded water soluble polymer.

Also provided for is a process for treating a surface comprising placing a water soluble container containing a composition comprising

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof; and

(b) at least one organic solvent having a solubility in water of at least 4%wt.;

(c) optionally, at least one alkanolamine; and

(d) optionally, up to about 10% wt. of one or more conventional additives selected from coloring agents, fragrances and fragrance solubilizers, viscosity modifying agents, other surfactants, other antimicrobial/germicidal agents, pH adjusting agents and pH buffers including organic and inorganic salts, optical brighteners, opacifying agents, hydrotropes, antifoaming agents, enzymes, anti-spotting agents, anti-oxidants, preservatives, and anti-corrosion agents;

wherein said composition contains no more than 1%wt. water

into an amount of water, allowing the water soluble container to dissolve in the water to form a cleaning solution, and applying an effective amount of the solution to the surface in need of treatment.

Also provided for is a process for treating a surface comprising placing a water soluble container containing a composition comprising

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof; and

(b) at least one organic solvent having a solubility in water of at least 4%wt.;

(c) at least one alkanolamine; and

(d) optionally, up to about 10% wt. of one or more conventional additives selected from coloring agents, fragrances and fragrance solubilizers, viscosity modifying agents, other surfactants, other antimicrobial/germicidal agents, pH adjusting agents and pH buffers including organic and inorganic salts, optical brighteners, opacifying agents, hydrotropes, antifoaming agents, enzymes, anti-spotting agents, anti-oxidants, preservatives, and anti-corrosion agents;

wherein said composition contains no more than 1%wt. water

into an amount of water, allowing the water soluble container to dissolve in the water to form a cleaning solution, and applying an effective amount of the solution to the surface in need of treatment.

Also provided is a process for treating a surface comprising placing a water-soluble container containing a composition comprising the compositions set forth above.

Detailed Description of the Invention

The present invention relates to a water soluble container containing a composition comprising:

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof;

(b) at least one organic solvent having a solubility in water of at least 4%wt.;

(c) optionally, at least one alkanolamine; and

(d) optionally, up to about 10% wt. of one or more conventional additives selected from coloring agents, fragrances and fragrance solubilizers, viscosity modifying agents, other surfactants, other antimicrobial/germicidal agents, pH adjusting agents and pH buffers including organic and inorganic salts, optical brighteners, opacifying agents, hydrotropes, antifoaming agents, enzymes, anti-spotting agents, anti-oxidants, preservatives, and anti-corrosion agents;

wherein said composition contains no more than 1%wt. water.

The invention further relates to a water-soluble container containing a composition comprising:

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof being present in an amount of from about 0.01 to about 20 percent by weight;

(b) at least one organic solvent having a solubility in water of at least 4%wt., said organic solvent being present in an amount of from about 5 to about 95 percent by weight;

(c) optionally, at least one alkanolamine, said alkanolamine, when present, is present in an amount of from about 0.01 to about 10 percent by weight; and

(d) optionally, up to about 10% wt. of one or more conventional additives selected from coloring agents, fragrances and fragrance solubilizers, viscosity modifying agents, other surfactants, other antimicrobial/germicidal agents, pH adjusting agents and pH buffers including organic and inorganic salts, optical brighteners, opacifying agents, hydrotropes, antifoaming agents, enzymes, anti-spotting agents, anti-oxidants, preservatives, and anti-corrosion agents;

wherein said composition contains no more than 1%wt. water.

The compositions can vary from those comprising

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof; and

(b) at least one organic solvent having a solubility in water of at least 4%wt.

and to those comprising

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof; and

(b) at least one organic solvent having a solubility in water of at least 4%wt.; and

(c) at least one alkanolamine.

The water soluble container can comprise a thermoformed or injection molded water soluble polymer.

Also provided for is a process for treating a surface comprising placing a water soluble container containing a composition comprising

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof; and

(b) at least one organic solvent having a solubility in water of at least 4%wt.;

(c) optionally, at least one alkanolamine; and

(d) optionally, up to about 10% wt. of one or more conventional additives selected from coloring agents, fragrances and fragrance solubilizers, viscosity modifying agents, other surfactants, other antimicrobial/germicidal agents, pH adjusting agents and pH buffers including organic and inorganic salts, optical brighteners, opacifying agents, hydrotropes, antifoaming agents, enzymes, anti-spotting agents, anti-oxidants, preservatives, and anti-corrosion agents;

wherein said composition contains no more than 1%wt. water

into an amount of water, allowing the water soluble container to dissolve in the water to form a cleaning solution, and applying an effective amount of the solution to the surface in need of treatment.

Also provided for is a process for treating a surface comprising placing a water soluble container containing a composition comprising

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof; and

(b) at least one organic solvent having a solubility in water of at least 4%wt.;

(c) at least one alkanolamine; and

(d) optionally, up to about 10% wt. of one or more conventional additives selected from coloring agents, fragrances and fragrance solubilizers, viscosity modifying agents, other surfactants, other antimicrobial/germicidal agents, pH adjusting agents and pH buffers including organic and inorganic salts, optical brighteners, opacifying agents, hydrotropes, antifoaming agents, enzymes, anti-spotting agents, anti-oxidants, preservatives, and anti-corrosion agents;

wherein said composition contains no more than 1%wt. water

into an amount of water, allowing the water soluble container to dissolve in the water to form a cleaning solution, and applying an effective amount of the solution to the surface in need of treatment.

Also provided is a process for treating a surface comprising placing a water-soluble container containing a composition comprising the compositions set forth above.

For the present invention, (a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof are used in the composition.

Nonlimiting examples of suitable non-ionic surfactants which may be used in the present invention are as follows:

(1) The polyethylene oxide condensates of alkyl phenols. These compounds include the condensation products of alkyl phenols having an alkyl group containing from about 6 to 12 carbon atoms in either a straight chain or branched chain configuration with ethylene oxide, the ethylene oxide being present in an amount equal to 5 to 25 moles of ethylene oxide per mole of alkyl phenol. The alkyl substituent in such compounds can be derived, for example, from polymerized propylene, diisobutylene and the like. Examples of compounds of this type include nonyl phenol condensed with about 9.5 moles of ethylene oxide per mole of nonyl phenol; dodecylphenol condensed with about 12 moles of ethylene oxide per mole of phenol; dinonyl phenol condensed with about 15 moles of ethylene oxide per mole of phenol and diisooctyl phenol condensed with about 15 moles of ethylene oxide per mole of phenol.

(2) The condensation products of aliphatic alcohols with from about 1 to about 60 moles of ethylene oxide. The alkyl chain of the aliphatic alcohol can either be straight or branched, primary or secondary, and generally contains from about 8 to about 22 carbon atoms. Examples of such ethoxylated alcohols include the condensation product of myristyl alcohol condensed with about 10 moles of ethylene oxide per mole of alcohol and the condensation product of about 9 moles of ethylene oxide with coconut alcohol (a mixture of fatty alcohols with alkyl chains varying in length from about 10 to 14 carbon atoms). One example of such a non-ionic surfactant is available as Empilan KM 50.

(3) Alkoxy block copolymers, and in particular, compounds based on ethoxy/propoxy block copolymers. Polymeric alkylene oxide block copolymers include non-ionic surfactants in which the major portion of the molecule is made up of block polymeric C_2-C_4 alkylene oxides. Such non-ionic surfactants, while preferably built up from an alkylene oxide chain starting group, and can have as a starting nucleus almost any active hydrogen containing group including, without limitation, amides, phenols, thiols and secondary alcohols.

Other non-ionic surfactants containing the characteristic alkylene oxide blocks are those which may be generally represented by the formula (A):

$$HO\text{-}(EO)_x(PO)_y(EO)_z\text{-}H \qquad (A)$$

where EO represents ethylene oxide,
PO represents propylene oxide,
y equals at least 15,
$(EO)_{x+y}$ equals 20 to 50% of the total weight of said compounds, and, the total molecular weight is preferably in the range of about 2000 to 15,000. These surfactants are available under the PLURONIC tradename from BASF or Emulgen from Kao.

Another group of non-ionic surfactants can be represented by the formula (B):

$$R\text{-}(EO,PO)_a(EO,PO)_b\text{-}H \qquad (B)$$

wherein R is an alkyl, aryl or aralkyl group, where the R group contains 1 to 20 carbon atoms, the weight percent of EO is within the range of 0 to 45% in one of the blocks a, b, and within the range of 60 to 100% in the other of the blocks a, b, and the total number of moles of combined EO and PO is in the range of 6 to 125 moles, with 1 to 50 moles in the PO rich block and 5 to 100 moles in the EO rich block.

Further non-ionic surfactants which in general are encompassed by Formula B include butoxy derivatives of propylene oxide/ethylene oxide block polymers having molecular weights within the range of about 2000-5000.

Still further non-ionic surfactants containing polymeric butoxy (BO) groups can be represented by formula (C) as follows:

$$RO\text{-}(BO)_n(EO)_x\text{-}H \qquad (C)$$

wherein R is an alkyl group containing I to 20 carbon atoms,

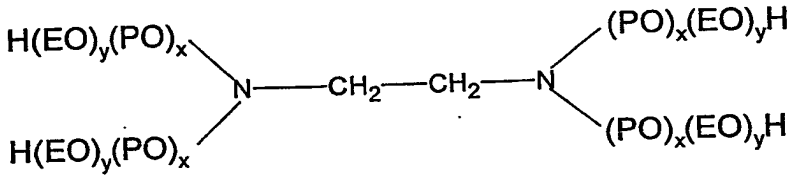
n is about 5-15 and x is about 5-15.

Also further non-ionic block copolymer surfactants, which also include polymeric butoxy groups, are those which may be represented by the following formula (D):

$$HO\text{-}(EO)_x(BO)_n(EO)_y\text{-}H \qquad (D)$$

wherein n is about 5-15, preferably about 15,
x is about 5-15, preferably about 15, and
y is about 5-15, preferably about 15.

Still further non-ionic block copolymer surfactants include ethoxylated derivatives of propoxylated ethylene diamine, which may be represented by the following formula:



(E)

where (EO) represents ethoxy,
(PO) represents propoxy,

the amount of $(PO)_x$ is such as to provide a molecular weight prior to ethoxylation of about 300 to 7500, and the amount of $(EO)_y$ is such as to provide about 20% to 90% of the total weight of said compound.

Other examples of non-ionic surfactants include linear alcohol ethoxylates. The linear alcohol ethoxylates which may be employed in the present invention are generally include the C6-C15 straight chain alcohols which are ethoxylated with about 1 to 13 moles of ethylene oxide.

Examples include Alfonic® 810-4.5, which is described in product literature from Sasol North America Inc. as having an average molecular weight of 356, an ethylene oxide content of about 4.85 moles (about 60 wt.%), and an HLB of about 12; Alfonic® 810-2,

which is described in product literature from Sasol North America Inc. as having an average molecular weight of 242, an ethylene oxide content of about 2.1 moles (about 40 wt.%), and an HLB of about 12; and Alfonic® 610-3.5, which is described in product literature from Sasol North America Inc. as having an average molecular weight of 276, an ethylene oxide content of about 3.1 moles (about 50 wt.%), and an HLB of 10. Product literature from Sasol North America Inc. also identifies that the numbers in the alcohol ethoxylate name designate the carbon chain length (numbers before the hyphen) and the average moles of ethylene oxide (numbers after the hyphen) in the product. These examples are typically C_6 -C_{11} straight-chain alcohols which are ethoxylated with from about 3 to about 6 moles of ethylene oxide.

Other examples of ethoxylated alcohols include the Neodol® 91 series non-ionic surfactants available from Shell Chemical Company which are described as C_9-C_{11} ethoxylated alcohols. The Neodol® 91 series non-ionic surfactants of interest include Neodol 91-2.5, Neodol 91-6, and Neodol 91-8. Neodol 91-2.5 has been described as having about 2.5 ethoxy groups per molecule; Neodol 91-6 has been described as having about 6 ethoxy groups per molecule; and Neodol 91-8 has been described as having about 8 ethoxy groups per molecule.

Further examples of ethoxylated alcohols include the Rhodasurf® DA series non-ionic surfactants available from Rhodia which are described to be branched isodecyl alcohol ethoxylates. Rhodasurf DA-530 has been described as having 4 moles of ethoxylation and an HLB of 10.5; Rhodasurf DA-630 has been described as having 6 moles of ethoxylation with an HLB of 12.5; and Rhodasurf DA-639 is a 90% solution of DA-630.

Further examples of ethoxylated alcohols include those from Tomah Products (Milton, WI) under the Tomadol tradename with the formula $RO(CH_2CH_2O)_nH$ where R is the primary linear alcohol and n is the total number of moles of ethylene oxide. The ethoxylated alcohol series from Tomah include 91-2.5; 91-6; 91-8 - where R is linear C9/C10/C11 and n is 2.5, 6, or 8; 1-3; 1-5; 1-7; 1-73B; 1-9; - where R is linear C11 and n is 3, 5, 7 or 9; 23-1; 23-3; 23-5; 23-6.5 - where R is linear C12/C13 and n is 1, 3, 5, or 6.5; 25-3; 25-7; 25-9; 25-12 - where R is linear C12/C13 C14/C15 and n is 3, 7, 9, or 12; and 45-7; 45-13 - where R is linear C14/C15 and n is 7 or 13

Another class of non-ionic surfactants include amine oxide compounds. Examples of amine oxide compounds may be defined as one or more of the following of the four general classes:

(1) Alkyl di (lower alkyl) amine oxides in which the alkyl group has about 6-24, and preferably 8-18 carbon atoms, and can be straight or branched chain, saturated or unsaturated. The lower alkyl groups include between 1 and 7 carbon atoms, but preferably each include 1 – 3 carbon atoms.. Examples include octyl dimethyl amine oxide, lauryl dimethyl amine oxide, myristyl dimethyl amine oxide, and those in which the alkyl group is a mixture of different amine oxides, such as dimethyl cocoamine oxide, dimethyl (hydrogenated tallow) amine oxide, and myristyl/palmityl dimethyl amine oxide;

(2) Alkyl di (hydroxy lower alkyl) amine oxides in which the alkyl group has about 6-22, and preferably 8-18 carbon atoms, and can be straight or branched chain, saturated or unsaturated. Examples include bis-(2-hydroxyethyl) cocoamine oxide, bis-(2-hydroxyethyl) tallowamine oxide; and bis-(2-hydroxyethyl) stearylamine oxide;

(3) Alkylamidopropyl di(lower alkyl) amine oxides in which the alkyl group has about 10-20, and preferably 12-16 carbon atoms, and can be straight or branched chain, saturated or unsaturated. Examples are cocoamidopropyl dimethyl amine oxide and tallowamidopropyl dimethyl amine oxide; and

(4) Alkylmorpholine oxides in which the alkyl group has about 10-20, and preferably 12-16 carbon atoms, and can be straight or branched chain, saturated or unsaturated.

Two or more amine oxides may be used, wherein amine oxides of varying chains of the R_2 group are present. Examples of amine oxide compounds include N-alkyl dimethyl amine oxides, particularly octyl dimethyl amine oxides as well as lauryl dimethyl amine oxide. These amine oxide compounds are available as surfactants from McIntyre Group Ltd. under the tradename Mackamine® as well as from Stepan Co., under the tradename Ammonyx®.

Non limiting examples of anionic surfactants include for example, alkali metal salts, ammonium salts, amine salts, or aminoalcohol salts of one or more of the following compounds (linear and secondary): alcohol sulfates and sulfonates, alcohol phosphates and phosphonates, alkyl sulfates, alkyl ether sulfates, sulfate esters of an alkylphenoxy

polyoxyethylene ethanol, alkyl monoglyceride sulfates, alkyl sulfonates, olefin sulfonates, paraffin sulfonates, beta-alkoxy alkane sulfonates, alkylamidoether sulfates, alkylaryl polyether sulfates, monoglyceride sulfates, alkyl ether sulfonates, ethoxylated alkyl sulfonates, alkylaryl sulfonates, alkyl benzene sulfonates, alkylamide sulfonates, alkyl monoglyceride sulfonates, alkyl carboxylates, alkyl sulfoacetates, alkyl ether carboxylates, alkyl alkoxy carboxylates having 1 to 5 moles of ethylene oxide, alkyl sulfosuccinates, alkyl ether sulfosuccinates, alkylamide sulfosuccinates, alkyl sulfosuccinamates, octoxynol or nonoxynol phosphates, alkyl phosphates, alkyl ether phosphates, taurates, N-acyl taurates, fatty taurides, fatty acid amide polyoxyethylene sulfates, isethionates, acyl isethionates, and sarcosinates, acyl sarcosinates, or mixtures thereof. Generally, the alkyl or acyl radical in these various compounds comprise a carbon chain containing 12 to 20 carbon atoms. The anionic surfactant is present in the compositions of the present invention in an amount of from about 0.1 to about 10% by weight.

Examples of the foregoing anionic surfactants are available under the following tradenames: RHODAPON, STEPANOL, HOSTAPUR, SURFINE, SANDOPAN, NEODOX, BIOSOFT, and AVANEL.

The at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof is present in the inventive composition in an amount of from about 0.01 to about 20%wt.

Another component of the compositions of the present invention are (b) at least one organic solvent having a solubility in water of at least 4%wt.. Examples of organic solvents which may be included in the inventive compositions include those which are at least partially water-miscible such as alcohols (e.g., low molecular weight alcohols, such as, for example, ethanol, propanol, isopropanol, and the like), glycols (such as, for example, ethylene glycol, propylene glycol, hexylene glycol, and the like), water-miscible ethers (e.g. diethylene glycol diethylether, diethylene glycol dimethylether, propylene glycol dimethylether), water-miscible glycol ether (e.g. propylene glycol monomethylether, propylene glycol mono ethylether, propylene glycol monopropylether, propylene glycol monobutylether, ethylene glycol monobutylether, dipropylene glycol monomethylether, diethyleneglycol monobutylether), lower esters of monoalkylethers of ethylene glycol or

propylene glycol (e.g. propylene glycol monomethyl ether acetate) all commercially available from Dow Chemical Co. (Midland, MI). Mixtures of several organic solvents can also be used.

Preferred as solvents in this invention are the glycol ethers having the general structure R_a-R_b-OH, wherein R_a is an alkoxy of 1 to 20 carbon atoms, or aryloxy of at least 6 carbon atoms, and R_b is an ether condensate of propylene glycol and/or ethylene glycol having from one to ten glycol monomer units. Preferred are glycol ethers having one to five glycol monomer units. These are C_3-C_{20} glycol ethers. Examples of more preferred solvents include propylene glycol methyl ether, dipropylene glycol methyl ether, tripropylene glycol methyl ether, propylene glycol isobutyl ether, ethylene glycol methyl ether, ethylene glycol ethyl ether, ethylene glycol butyl ether, diethylene glycol phenyl ether, propylene glycol phenol ether, and mixtures thereof.

The amount of at least one organic solvent in the inventive compositions ranges from about 5 to about 80%wt.

Another component of the compositions of the present invention are (c) optionally, at least one alkanolamine and include such as, for example, mono-, di- and tri-alkanolamines. Examples of alkanolamines include, for example monoethanolamine, diethanolamine, triethanolamine and isopropanolamine. The alkanolamine constituent comprises from 0.01 to about 10.0% wt. of the inventive compositions.

The compositions according to the invention are useful in the cleaning of surfaces, especially hard surfaces in need of such treatment. In accordance with the present inventive process, cleaning of such surfaces comprises the steps of placing one or more water soluble containers which contains a composition of the present invention into a container containing an amount of water (for example, spray bottle with dip tube, a bucket) and allowing the container to dissolve, and then applying an effective amount of a composition as taught herein, by sponging, mopping, scrubbing, or spraying, to such surface in need of treatment. Afterwards, the compositions are optionally but desirably wiped, scrubbed or otherwise physically contacted with the hard surface, and further optionally, may be subsequently rinsed from the surface.

By way of example, hard surfaces include surfaces composed of refractory materials such as: glazed and unglazed tile, porcelain, ceramics as well as stone including marble, granite, and other stones surfaces; glass; mirrors; metals; plastics e.g. polyester, vinyl; fiberglass, Formica®, Corian® and other hard surfaces known to the industry. Hard surfaces which are to be particularly denoted are lavatory fixtures such as shower stalls, bathtubs and bathing appliances (racks, shower doors, shower bars) toilets, bidets, wall and flooring surfaces especially those which include refractory materials and the like.

EXAMPLE FORMULATIONS

Preparation of Example Formulations:

Exemplary formulations illustrating certain embodiments of the inventive compositions and described in more detail in Table 1 below were formulated generally by adding the components into a suitably sized vessel in no particular order and at room temperature. If any of the components are solid, thick or gel-like at room temperature, they can be warmed to render them pourable liquids prior to addition to the vessel. Mixing of the constituents was achieved by the use of a mechanical stirrer with a small diameter propeller at the end of its rotating shaft. Mixing, which generally lasted from 5 minutes to 120 minutes was maintained until the particular exemplary formulation appeared to be homogeneous. The exemplary compositions were readily pourable, and retained well mixed characteristics (i.e., stable mixtures) upon standing for extend periods.

The compositions of the example formulations are listed on Table 1.

Table 1

Example No.	Ex. 1	Ex. 2	Ex. 3	Ex. 4	Ex. 5	Ex. 6	Ex. 7	Ex. 8	Ex. 9
Dowanol PnB	60	35	20	45	45	45	45	45	45
IPA	36	36	36	18	15.6	14.8	14.7	14.75	14.74
Dowanol PM		25	40	25	30	30	30	30	30
Stepanol WAC	1.9	1							
Emulgen MS-110				10	7	7	7	7	7
APG 325N	1.75	2	2						
MEA				2	2	2	2	2	2
Fragrance	0.95				0.4	1.2	1.2	1.2	1.2
Dye							0.1	0.05	0.06

Table 1 (cont'd)									
Example No.	Ex.10	Ex.11	Ex.12	Ex.13	Ex.14	Ex.15	Ex.16	Ex.17	Ex.18
Dowanol PnB	45	45	40	45	45	45	45	45	42
IPA	14.68	14.7	14.68	14.8	14.8	14.8	14.8	15	15
Dowanol PM	30	30	35	30	30	30	30	38	35
Emulgen MS-110	7	7	7	7	7	7			7
Alpha step MC48							7		
MEA	2	2	2	2			2	2	1
Fragrance	1.2	1.2	1.2		1.2		1.2		
Dye	0.12	0.1	0.12						

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Table 1 (cont'd)									
Example No.	Ex.19	Ex.20	Ex.21	Ex.22	Ex.23	Ex.24	Ex.25	Ex.26	Ex.27
Dowanol PnB	40.8	75.75		49.8	50	40.8	45	42	43
IPA	15	15	15			15	15		
Dowanol PM	35		75.75	40	40.75	35	37.8	33.75	33.75
Emulgen MS-110	7	7	7	7	7	7	7	7	7
Propylene glycol								14	14
MEA	1	1	1	2	1	1	1	2	1
Fragrance	1.2	1.25	1.25	1.2	1.25	1.2	1.2	1.25	1.25

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Table 1 (cont'd)									
Example No.	Ex.28	Ex.29	Ex.30	Ex.31	Ex.32	Ex.33	Ex.34	Ex.35	Ex.36
Dowanol PnB	43	40	40	41.68	41.69	44.49	44.3	44.54	44.5
IPA		14.8							
Dowanol PM	36.25	35	35	35	35	35	35	35	35
Emulgen MS-110	4	7	7	6.5	6.5	6.5	6.5	6.5	
Biosoft FF-600									6.5
Propylene glycol	14		16.75	12.5	12.5	12.5	12.5	12.5	12.5
MEA	1.5	2				.2	.4		.3
Fragrance	1.25	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
BHT		.1							
Kathon CG			0.5	3	3			.15	
Dye				.12	.11	.11	.1	.11	

Table 1 (cont'd)									
Example No.	Ex.37	Ex.38	Ex.39	Ex.40	Ex.41	Ex.42	Ex.43	Ex.44	Ex.45
Dowanol PnB	44	44	44.6	44.6	44.6	44.6	44.6	44.6	44.6
IPA				5	5	5	5		5
Dowanol PM	35	35	35	30	30	30	30	35	30
Plurafac LF-221	7								
Plurafac RA-30		7							
Emulgen MS-110				4.5	4.5	6.5	6.5		2
Rewoquat CQ-100			6.5	2	2				
Propylene glycol	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Glucopon 425LF								6.5	4.5
MEA	.3	.3	.2	.2		.2		.2	.2
Zonyl FSO						.03	.03		
Fragrance	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Kathon CG					.15		.15		

Table 1 (cont'd)									
Example No.	Ex.46	Ex.47	Ex.48	Ex.49	Ex.50	Ex.51	Ex.52	Ex.53	Ex.54
Dowanol PnB	44.6	44.49	44.39	44.64	44.54	44.54	44.54	44.54	44.54
Dowanol PM	30	35	35	35	35	35	35	35	35
Ninate 411						2	6.5		
Emulgen MS-110	4.5	4.5	4.5	4.5	4.5	4.5			4.5
Rewoquat CQ-100	2	2	2	2	2				
Propylene glycol	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Stepantex DA-6								6.5	2
MEA	.2	.2	.3			.3	.3	.3	.3
NaOH 50%				.05					
Fragrance	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Kathon CG					.15				
Dye		.11	.11	.11	.11	.11	.11	.11	.11

Table 1 (cont'd)				
Example No.	Ex.55	Ex.56	Ex.57	Ex.58
Dowanol PnB	44.39	43.69	43.6	42.69
Dowanol PM	35	35	35	35
Emulgen MS-110	4.5	4.5	4.5	4.5
Rewoquat CQ-100	2	2	2	2
Propylene glycol	12.5	12.5	12.5	12.5
MEA	1	1	2	2
Fragrance		1.2		1.2
Dye		.11	.4	.11

The above formulations are then placed into either thermoformed or injection molded water-soluble containers using the methods described above. The water soluble containers showed no very little or no migration of liquid.

The components of the compositions set forth in the above Table 1 are described in Table 2 below. The indicated weight percentages are "as supplied" with the percent actives shown in parenthesis.

Table 2

Component	
Stepanol WAC	Sodium lauryl sulfate (29% Active; Stepan)
Emulgen MS-110	C_{12}-C_{14}(EO/PO/EO) non-ionic surfactant (100% Active; Kao)
APG 325N	Alkyl polyglycoside (50% active; Clariant)
Alpha step MC48	Sodium alphasulfo methyl C_{12-18} ester and disodium alphasulfo C_{12-18} fatty acid salt (37% Active; Stepan)
IPA	Isopropanol
Dowanol PnB	Propylene Glycol n-Butyl Ether (Dow)
Dowanol PM	Propylene Glycol Methyl Ether (Dow)
MEA	Monoethanolamine
Fragrance	Fragrance
Propylene glycol	Propylene glycol
Dowanol DPnB	Dipropylene Glycol n-Butyl Ether (Dow)
Biosoft FF-600	C_{6-10} alcohol ethoxylate (4EO) (Stepan)
Dye	Dye
BHT	Butylated hydroxytoluene
Kathon CG	Methylchloroisothiazolinone/methylisothiazolinone (biocide) (1.5% Active; Rohm & Haas)
Plurafac LF-221	Linear alcohol alkoxylate (100% Active; BASF)
Plurafac RA-30	Alkoxylated fatty alcohol (C_{12}-C_{15}) (100% Active; BASF)
Rewoquat CQ-100	Mixture of ethoxylated cocoalkyl methyl quaternary ammonium chlorides and ethoxylated fatty alcohols (100% Active; Degussa)
Glucopon 425LF	Alkyl polyglycoside (50% Active; Clariant)
Zonyl FSO	Ethoxylated fluorinated cationic surfactant (30% active; DuPont)
Ninate 411	Isopropyl amine alkylbenzene sulfonate (90% Active; Stepan)
Stepantex DA-6	Isodecyl alcohol ethoxylate 100% Active; Stepan)
NaOH	Sodium hydroxide
Neodol 91-6	C_9-C_{11} ethoxylated alcohol having about 6 ethoxy groups per molecule (100% Active; Shell)
Neodol 91-8	C_9-C_{11} ethoxylated alcohol having about 8 ethoxy groups per molecule (100% Active; Shell)

In use, a water soluble container can be placed into a spray bottle which uses a dip tube and trigger assembly to dispense a liquid, an amount of water (usually from about 16 to 32 ounces, depending upon the bottle and size of the water soluble container) is added to the bottle wherein the water soluble container starts to dissolve. The dip tube with trigger assembly is then reattached to the bottle and the solution formed therein is ready for us. The resulting solution can be used to treat a variety of surfaces, examples of

which are described above. In addition, the water soluble container can also be used in conjunction with cleaning systems which comprise a handle, a cleaning head, and a fluid reservoir wherein the fluid reservoir is attached to the handle such that the fluid in the reservoir is dispensed onto a surface to be cleaned adjacent to the cleaning head. In use, the water soluble container is placed into the fluid reservoir, the requisite amount of water is added to the reservoir and the water soluble container dissolves, releasing the composition contained therein to be released into the reservoir. The resulting solution is then ready to use in the cleaning system. Examples of cleaning systems include those described in, for example, WO 01/72195; WO 01/22861; WO 00/27271; WO 98/42246; DE 3940123; and United States Patent No. 5,888,006.

The compositions of the present invention will have good cleaning properties and will not leave streaks on shiny surfaces, such as glass and mirrors.

While the principles of the invention have been made clear in illustrative embodiments, there will be immediately obvious to those skilled in the art many modifications of structure, arrangement, proportions, the elements, materials, and components used in the practice of the invention, and otherwise, which are particularly adapted to specific environments and operative requirements without departing from those principles. The appended claims are intended to cover and embrace any and all such modifications, with the limits only of the true purview, spirit and scope of the invention.

Claims:

1. A water soluble container containing a composition comprising:

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof;

(b) at least one organic solvent having a solubility in water of at least 4%wt.;

(c) optionally, at least one alkanolamine; and

(d) optionally, up to about 10% wt. of one or more conventional additives selected from coloring agents, fragrances and fragrance solubilizers, viscosity modifying agents, other surfactants, other antimicrobial/germicidal agents, pH adjusting agents and pH buffers including organic and inorganic salts, optical brighteners, opacifying agents, hydrotropes, antifoaming agents, enzymes, anti-spotting agents, anti-oxidants, preservatives, and anti-corrosion agents;

wherein said composition contains no more than 1%wt. water.

2. The container according to claim 1 which comprises a thermoformed or injection molded water soluble polymer.

3. The container according to claim 2 wherein the water soluble polymer is poly(vinyl alcohol).

4. The container according to claims 1 to 3 wherein the composition comprises

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof; and

(b) at least one organic solvent having a solubility in water of at least 4%wt..

5. The container according to claims 1 to 3 wherein the composition comprises

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof;

(b) at least one organic solvent having a solubility in water of at least 4%wt.; and

(c) at least one alkanolamine.

6. The container according to claim 5 wherein the amount of (c) at least one alkanolamine is present in an amount of from about 0.01 to about 10 percent by weight.

7. The container according to any one of claims 1 to 6 wherein (a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof is present in an amount of from about 0.01 to about 20 percent by weight.

8. The container according to any one of claims 1 to 7 wherein (b) at least one organic solvent is present in an amount of from about 5 to about 95 percent by weight.

9. The container according to any one of claims 1 to 8 wherein (a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof is a non-ionic surfactant.

10. The container according to any one of claims 1 to 8 wherein (a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof is an anionic surfactant.

11. A water soluble container containing a composition comprising:

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof being present in an amount of from about 0.01 to about 20 percent by weight;

(b) at least one organic solvent having a solubility in water of at least 4%wt. being present in an amount of from about 5 to about 95 percent by weight;

(c) optionally, at least one alkanolamine, when present in an amount of from about 0.01 to about 10 percent by weight; and

(d) optionally, up to about 10% wt. of one or more conventional additives selected from coloring agents, fragrances and fragrance solubilizers, viscosity modifying agents, other surfactants, other antimicrobial/germicidal agents, pH adjusting agents and pH buffers including organic and inorganic salts, optical brighteners, opacifying agents, hydrotropes, antifoaming agents, enzymes, anti-spotting agents, anti-oxidants, preservatives, and anti-corrosion agents;

wherein said composition contains no more than 1%wt. water.

12. The container according to claim 11 which comprises a thermoformed or injection molded water-soluble polymer.

13. The container according to claim 12 wherein the water-soluble polymer is poly(vinyl alcohol).

14. The container according to claim 11 wherein the composition comprises:

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof being present in an amount of from about 0.01 to about 20 percent by weight; and

(b) at least one organic solvent having a solubility in water of at least 4%wt. present in an amount of from about 5 to about 95 percent by weight.

15. The container according to claim 11 wherein the composition comprises:

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof being present in an amount of from about 0.01 to about 20 percent by weight;

(b) at least one organic solvent having a solubility in water of at least 4%wt. present in an amount of from about 5 to about 95 percent by weight; and

(c) at least one alkanolamine present in an amount of from about 0.01 to about 10 percent by weight.

16. The container according any one of claims 11 to 15 wherein (a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof is a non-ionic surfactant.

17. The container according to any one of claims 11 to 15 wherein (a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof is an anionic surfactant.

18. The water-soluble containers of the present invention containing a composition substantially selected from Examples Ex. 1 to Ex. 58

19. A method of preparing a cleaning solution comprising placing a water soluble container containing a composition comprising

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof;

(b) at least one organic solvent having a solubility in water of at least 4%wt.;

(c) optionally, at least one alkanolamine; and

(d) optionally, up to about 10% wt. of one or more conventional additives selected from coloring agents, fragrances and fragrance solubilizers, viscosity modifying agents, other surfactants, other antimicrobial/germicidal agents, pH adjusting agents and pH buffers including organic and inorganic salts, optical brighteners, opacifying agents, hydrotropes, antifoaming agents, enzymes, anti-spotting agents, anti-oxidants, preservatives, and anti-corrosion agents;

wherein said composition contains no more than 1%wt. water,

into an amount of water, and allowing the water soluble container to dissolve.

20. The method according to claim 19 wherein (a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof is a non-ionic surfactant.

21. The method according to claim 19 wherein (a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof is an anionic surfactant.

22. A process for treating a surface comprising placing a water soluble container containing a composition comprising

(a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof;

(b) at least one organic solvent having a solubility in water of at least 4%wt.;

(c) optionally, at least one alkanolamine; and

(d) optionally, up to about 10% wt. of one or more conventional additives selected from coloring agents, fragrances and fragrance solubilizers, viscosity modifying agents, other surfactants, other antimicrobial/germicidal agents, pH adjusting agents and pH buffers including organic and inorganic salts, optical brighteners, opacifying agents,

hydrotropes, antifoaming agents, enzymes, anti-spotting agents, anti-oxidants, preservatives, and anti-corrosion agents;

wherein said composition contains no more than 1%wt. water

into an amount of water, allowing the water soluble container to dissolve in the water to form a cleaning solution, and applying an effective amount of the solution to the surface in need of treatment.

23. The method according to claim 22 wherein (a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof is a non-ionic surfactant.

24. The method according to claim 22 wherein (a) at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof is an anionic surfactant.

Abstract

IMPROVEMENTS IN OR RELATING TO ORGANIC COMPOSITIONS

The invention relates to a water soluble container which contains a composition useful for hard surface cleaning. The composition comprises at least one surfactant selected from non-ionic surfactant, anionic surfactant, and mixtures thereof, at least one organic solvent having a solubility in water of at least 4%wt., optionally at least one alkanolamine; and optionally, conventional additives, where the composition contains less than 1 percent water. The water soluble containers can be made by thermoforming or injection molding.

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